

## CLAIMS:

1. A magnetic localization device, comprising:
  - a) a field generator (2) for generating a magnetic field;
  - b) a field sensor (4) for measuring the magnetic field;
  - c) a reference sensor (3) for measuring the magnetic field at a known reference  
5 position;
  - d) a control unit (5), which is arranged for determining the position ( $\underline{x}$ ) of the field sensor (4) relative to the field generator (2) and thereby for compensating external field distortions by taking the reference sensor (3) into consideration.
- 10 2. A localization device as claimed in claim 1, characterized in that the spatial position of the field generator (2) is known.
3. A localization device (1) as claimed in claim 1, characterized in that the field generator (2) and/or the reference sensor (3) are fastened to the gantry (1) of a computer  
15 tomograph.
4. A localization device as claimed in claim 1, characterized in that the control unit (5) contains a memory with a calibration function ( $\underline{\delta}(\underline{x}, \Phi)$ ), which provides a correction shift ( $\delta$ ) for the uncorrected determined position ( $\underline{x}$ ) of the field sensor (4) based on  
20 measured signals of the reference sensor (3) and the field sensor (4).
5. An examination device, comprising:
  - an imaging device, in particular a computer tomograph (1);
  - a magnetic localization device (2, 3, 4, 5) as claimed in any one of the claims 1  
25 to 4.
6. A method for position measurement with a magnetic localization device (2, 3, 4, 5), comprising the steps of:
  - a) collecting the signals of a field sensor (4) and/or a field generator (2);

- b) collecting the signals of a magnetic reference sensor (3), which is placed at a known spatial position relative to the field generator (2) or to the field sensor (4);
- c) determining the position ( $\underline{x}'$ ) of the field sensor (4) relative to the field generator (2), where external field distortions are compensated by taking the signals of the reference sensor (3) into consideration.
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7. A method as claimed in claim 6, characterized in that a correction function ( $\delta(\underline{x}, \Phi)$ ) is determined, which indicates a correction shift ( $\delta$ ) for the uncorrected determined position of the field sensor (4) in dependence on the signal of the reference sensor (3) and the
- 10 uncorrected determined position ( $\underline{x}$ ) of the field sensor (4).
8. A method as claimed in claim 7, characterized in that the correction function ( $\delta(\underline{x}, \Phi)$ ) for support points in a volume of interest (VOI) is empirically determined and extended by extrapolation or interpolation respectively on the whole volume (VOI).
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9. A method as claimed in claim 6, characterized in that a parameter ( $\Phi$ ) is determined from the signal of the reference sensor (3), which parameter characterizes the external field distortion.
- 20 10. A method as claimed in claim 9, characterized in that the parameter ( $\Phi$ ) describes the angle of rotation of a computer tomograph (1) situated in the vicinity of the localization device.